PERMIT TO OPERATE EVALUATION--MODIFICATION
SPRAY BOOTH

Applicant's Name	**THE BOEING COMPANY, C17 PROGRAM**
Company I.D.	**800038**
Mailing Address	**3855 LAKEWOOD BLVD., LONG BEACH, CA 90846**
Equipment Address	**3855 LAKEWOOD BLVD., LONG BEACH, CA 90846**

EQUIPMENT DESCRIPTION

Application No. 473476 (Modification, Previous A/N 434319, P/N F76753) (D28)

SPRAY BOOTH, BUILDING NO. 59, HANGAR, FLOOR TYPE, 75' - 6" W. X 200' – 0" L. X 30' – 0" H., FOUR HUNDRED FIFTY TWO 20" X 20" X 2" PANEL EXHAUST FILTERS AND FOUR HUNDRED FIFTY-TWO 20" X 20" X 10" BAG EXHAUST FILTERS, AND TEN 20 H. P. EXHAUST FANS.

Application No. 473475

RECLAIM/TITLE V PERMIT REVISION

HISTORY

The Boeing Co. submitted above application for a permit to construct/operate to modify an existing aircraft hangar previously permitted under Permit No. F 76753 (Application No. 434319). The existing permit was issued to this equipment in 2005 to include necessary permit conditions restricting daily VOC emissions to qualify exemption from Rule 1132 requirements. The original permit for this equipment was issued in 1990 under application no. 140485 (Permit # D33972).

The applicant is requesting under this modification project to allow them to operate only selected number of fans depending on the side of the booth being used to paint a smaller part. This is a very large hangar with capacity to apply paint to a whole assembled aircraft. However, this hangar is generally used to apply coatings to large aircraft part at a time such as a wing, etc. The change being sought to conserve energy consumption.

The hangar (spray booth) operates at a slight negative pressure and doors are closed when it is in operation. The District was informed when the original application (# 140485) was submitted to construct this equipment that the length of the spray booth is divided in to ten sections. Each section has its own set of exhaust filters, fan, exhaust stack, and pressure differential gauge. The booth is designed with variable speed drives on all exhaust fans. Thus, the exhaust system will maintain the desired airflow rate even if one fan fails to operate. Depending on the need, one or more sections can be operated at the same time. The applicant now requests to operate only six exhaust fans located near the painting operation being performed. Under this arrangement total air exhausted would be about 135,000 CFM or 131,600 CFM and the total air intake would be about 135,000 CFM. When all the exhaust fans operate, total air exhausted is about 220,100 CFM and the total air intake is about 225,000 CFM. The permit condition (E71.4) allows the booth to be operated at 90,000 CFM or greater.

The Douglas Products, a Division of the Boeing Company manufactures/fabricates military and civilian aircrafts at this location. The company operates a number of permitted equipment such as spray booths, ovens, boilers, degreasers, I.C. engines, scrubbers, storage tanks, chemical process lines, afterburner, etc. under the Title V/RECLAIM permit (I. D. # 800038).

There will not be an emission increases over the existing limits under this project, since the current 150 lbs./day VOC emission limit of the equipment and the facility-wide combined spray booth limit of 341 gals/day would remain unchanged. Thus, this project is expected to comply with the BACT requirements. Also, this project will not require any offsets.

The District database shows that the applicant has not received any odor nuisance complaints from the public on these types of equipment. The company received three Notices to Comply to provide records, maintain gas station equipment, and to apply for permit for a kerosene fired steamer from the District, which were disposed “in-compliance” upon re-inspection. No notices of violations were issued to this facility on these types of equipment.

This facility is not located within 1000 feet from any school and there are no emission increases exceeding Rule 212 thresholds from this project, hence, these applications did not require a public notice. This facility is a Title V facility. An initial Title V permit was issued to this facility on January 20, 2003. The proposed project is considered a “minor permit revision” to the initial Title V permit, as described in Regulation XXX evaluation.

PROCESS DESCRIPTION

This is a major aircraft manufacturing facility in the basin. Both military and commercial aircrafts are manufactured at this location. Aerospace components or the whole aircrafts are coated in a number of permitted spray booths. The above described spray booth is a large hangar capable to handle complete military aircraft, equipped with a two stage filter system (panels and bags) to control the particulate emissions. This semi down-draft booth is equipped with heated-filtered air supply to maintain a constant air temperature between 80 to 90 degrees of Fahrenheit and humidity. The contaminated air flows through the filters located on a side wall.

The coatings are sprayed on the parts using HVLP spray equipment with at least 65% transfer efficiency. Coating materials used in the equipment comply with Rule 1124 requirements. The spray guns are cleaned in enclosed gun cleaners that are in compliance with Rule 1171 requirements and Aerospace NESHAP requirements for solvent cleaning.

The exhaust flow rates for all the spray booths were determined for CalOSHA compliance requirements in the past. Since the booths were installed years ago, the applicant decided to have an air balancing company (Air Balance, Inc.) come in to measure the flow rates of the paint booths. Air Balance, Inc. utilized certified instruments/equipment to determine all the flow rates. For this spray booth the flow rate was measured across the entire bank of filters, as the stacks are not readily accessible for taking flow measurements (part of exterior stack would have to be dismantled in order to access interior stack).

OPERATING HOURS

Average : 8 hour/day, 7 day/week, 50 weeks/year
Maximum: 16 hour/day, 7 day/week, 50 weeks/year

EMISSION CALCULATIONS

All the spray booths at this facility are restricted with individual VOC emission cap (150 lbs/day for this equipment) and a facility cap of 341 gallons of coatings and solvent per day. All other criteria pollutant emissions will remain same based on the previous application. Thus, NSR values will remain unchanged.

Daily VOC emissions = 150 lbs/day
Hourly VOC emissions = 150 lbs/day ÷ 16 hrs/day = 9.4 lbs/hr

RULE 1132 & 1469.1 COMPLIANCE DETERMINATION

The Boeing Company (formerly Douglas Products Division) requested a Rule 1132 exemption for this hangar D28 under Application No. 434319. As a result, Condition A63.2 and E71.4 were imposed to limit the VOC emission from D28 to 150 lbs/day and to require a minimum exhaust flow rate of 90,000 cfm. This equipment is currently equipped with a total of 10 exhaust blowers with a total exhaust flow rate of 220,100 cfm. All 10 exhaust blowers will always be operated simultaneously by an interlock switch. In order to comply with Rule 1469.1(d)(1), this interlock switch is programmed to operate these blowers for an additional 7 minutes after the coating operations have ceased inside this equipment. The following calculations shows that such an operation is expected to create more than three air exchanges within this equipment:

Dimensions: 75.5 ft. deep x 200 ft. wide x 30 ft. high (453,000 ft^3)
Maximum Exhaust Flow Rate: 220,100 ft^3/minute
Additional Operation Time: 7 minutes
Air Exchanges: (220,100 x 7)/(453,000) = 3.4

This facility is now proposing to operate only a section of this equipment (either the west-side or east-side) with a total of 6 exhaust blowers. The exhaust flow rates for the proposed operations are expected to be:

West-Side: 131,300 ft^3/minute
East-Side: 134,800 ft^3/minute

Since this equipment will be operating with only 6 of the 10 blowers, additional operating time for these 6 blowers will be required after the coating operations have ceased to ensure a sufficient exhaust flow rate to remove all contaminated air within this equipment and to demonstrate compliance with Rule 1469.1(d)(1). As a result, the requirement of three air exchanges specified in Rule 1469.1(d)(1)(C)(i) will be used as the basis to determine the additional operating time required for these 6 blowers.

West-Side: (453,000 ft^3 x 3)/ (131,300 ft^3/minute) = 10.4 minutes
East-Side: (453,000 ft^3 x 3)/ (134,800 ft^3/minute) = 10.1 minutes

Based on the above calculations, the following requirements will be imposed to ensure compliance with Rule 1469.1(d)(1):

1. Condition E71.4 will be revised to increase the minimum exhaust flow rate from 90,000 cfm to 130,000 cfm since this equipment will always be operated at this minimum exhaust rate. Such a change will not affect Condition A63.2 since the VOC emission limit of 150 lbs/day is allowed for an exhaust flow rate between 90,000 cfm and 275,000 cfm under Rule 1132(h)(2).

2. A permit condition will be added to require an interlock system to simultaneously operate a minimum of 6 blowers. Such an interlock system will continue to keep these 6 blowers in operation for a minimum of 11 minutes after the coating operations have ceased inside this equipment.

This equipment is also expected to comply with 100 feet per minute face velocity specified in Rule 1469.1 as below:

Filter area = 20" X 20" X 452 = 1256 sq. ft.

Exhaust flow = 220,100 ft^3/min

Face Velocity = 220100/1256 = 175 ft/min.

RULES/REGULATION EVALUATION

¤ ***RULE 212, PUBLIC NOTIFICATION***

v*SECTION 212(c)(1):*

This section requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. This source is not located within 1,000 feet from the outer boundary of a school. Therefore, public notice will not be required by this section.

v *SECTION 212(c)(2):*

This section requires a public notice for all new or modified facilities which have on-site emission increases exceeding any of the daily maximums as specified in subdivision (g). As shown in the following table, the emission increases for all the boilers are below the daily maximum limits specified by Rule 212(g). Therefore, this application is not subject to this section.

LB/DAY	CO	NOX	PM_{10}	ROG	SOX	Pb
MAX. LIMIT	220	40	30	30	60	3
INCREASES	0	0	0	0	0	0

v *SECTION 212(c)(3):*

Please, see Rule 1401 evaluation section.

v *SECTION 212(g):*

This section requires a public notice for all new or modified sources which have on-site emission increases exceeding any of the daily maximums as specified in subdivision. As shown in the following table, the emission increases for CEW 700-800 boiler (D553, highest emission of the three boilers) are below the daily maximum limits specified by Rule 212(g). Therefore, this application is not subject to this section.

LB/DAY	CO	NOX	PM_{10}	ROG	SOX	Pb
MAX. LIMIT	220	40	30	30	60	3
INCREASES	0	0	0	0	0	0

¤*RULES 401 & 402, VISIBLE EMISSIONS & NUISANCE*

With the use of 2" thick dry panel and bag filters in liquid coating booth, compliance with the provisions of these rules is expected. AQMD database has no records of any visible emissions or nuisance complaints against this company.

¤ *RULE 481, SPRAY COATING OPERATIONS*

v ***SECTION (a)***

The use of HVLP spray equipment will comply with these requirements.

¤ *RULE 1124, AEROSPACE ASSEMBLY AND COMPONENT MANUFACTURING OPERATIONS*

Compliance is expected with this rule since the operation of the spray booth and the coating materials will remain unchanged.

¤ *RULE 1132, FURTHER CONTROL OF VOC EMISSIONS FROM HIGH EMITTING SPRAY BOOTH FACILITIES*

This booth is exempt from these requirements per subparagraph (h)(2), as VOC emission from this booth is limited to 150 pounds per day for an exhaust flow-rate between 90,000 and 275,000 cfm.

¤ *RULE 1171, SOLVENT CLEANING OPERATIONS*

Compliance is expected with this rule since the operation of the solvent cleaning and the cleaning solvents will remain unchanged.

REGULATION XIII

¤ *RULE 1303(a), BEST AVAILABLE CONTROL TECHNOLOGY (BACT)*

v *VOC AND PM10 EMISSIONS*

This equipment is not subject to these requirements due to no increase in the VOC or PM emissions from this project.

¤ *RULE 1303(b)(1), MODELING*

No detailed modeling analysis required as there will not be any PM10 emission increases under this project.

¤ ***RULE 1303 (b)(2), EMISSION OFFSETS***
The emission offsets are not required as there are no emission increases from this project,

¤ ***RULE 1401, NEW SOURCE REVIEW OF CARCINOGENIC AIR CONTAMINANTS***
There are no emission increases from this project, hence Rule 1401 exemption apply.
¤ ***RULE 1469.1 ,SPRAYING OPERATIONS USING COATINGS CONTAINING CHROMIUM***

(d)(1) The company is in compliance with these requirements with a continuous inward flow of air, with at least 100 feet per minute average face velocity of air through the open face enclosure and more than three air exchanges within the spray enclosure after spraying operation has ceased.

(d)(2) The company is in compliance with these requirements with use of HVLP spray equipment.

(d)(3) The company is in compliance with these requirements with an District approved HRA which shows a cancer risk of less than 10 in a million at all receptor locations.

REGULATION XXX

The proposed project is considered as a "minor permit revision" to the current Title V permit for this facility since there is not an emission increase of pollutants subject to Reg. XIII or hazardous air pollutants. Rule 3000(b)(12) defines a "minor permit revision" as any Title V permit revision that does not result in any of the following:

- Emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations, or a higher Allocation amount which has previously undergone a significant permit revision process,

- Emission increase in hazardous air pollutants (HAPs) or pollutants subject to Reg. XIII, or

- Installation of a new permit unit or the modification or reconstruction of an existing permit unit subject to a New Source Performance Standard (NSPS) per 40 CFR Part 60 or a National Emission Standard for HAPs per 40 CFR Part 61 or Part 63.

Rule 3003(j) specifies that all proposed Title V permit revisions shall be submitted to EPA for review. This is the fifteenth permit revision requested by the facility. The cumulative emission increases resulting from this proposed permit revision are summarized as follows:

Revision	HAP	VOC	NOx	PM_{10}	SOx	CO
1st Permit Revision: Move devices D535, C536 and D538-536 from Section H to Section D.	0	0	0	0	0	0
2nd Permit Revision: Add devices D546-D548 (surface prep. line)	0	0	0	0	0	0
3rd Permit Revision: Add devices D549, D551, D553 (boilers)	0	1	5	1	0	8
4th Permit Revision: Add devices D555 and D556 to the underground treatment system	0	0	0	0	0	0
5th Permit Revision: For typo correction	0	0	0	0	0	0
6th Permit Revision: Change condition on device D505	0	0	0	0	0	0
7th Permit Revision: Move devices D549, D551, D553 (boilers) under 3rd revision from Sec H to D	0	0	0	0	0	0
8th Permit Revision: For installation of ICE D557		1	1	0	0	0
9th Permit Revision: C/C of D549, D551 and D557	0	5	9	4	0	0
10th Permit Revision: C/C of existing spray booths D16, D28, D31, D37, D38, D39 & D505 for compliance with emission limit of R-1132 and removal of spray booth D30(later reactivated per company request) and ICE D252. Also includes modification of D31 by changing from waterwash to dry filter (separate evaluation).	0	0	0	0	0	0
11th Permit Revision: For installation of ICE D563	0	0	1	0	0	0
12th Permit Revision: Move devices D549, D551, D553 (boilers) under 9th revision from Sec H to D	0					
13th Permit Revision: For installation of ICE D564	0	0	1	0	0	0
14th Permit Revision: Move devices D31(Spray Booth) under 10th revision from Sec H to D	0	0	0	0	0	0
15th Permit Revision: Modification of D28 (Spray Booth),	0	0	0	0	0	0
Total Emissions Increase Since the Issuance of Initial Title V Permit	0	8	17	0	8	8
Maximum Daily Threshold	30	30	40	30	60	220

CONCLUSIONS/RECOMMENDATIONS

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a "minor permit revision", it is exempt from the public participation requirements under Rule 3006 (b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V permit will be issued to this facility.